PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

PCT

To:

see form PCT/ISA/220

6/10

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43*bis*.1)

Applicant's or agent's file reference see form PCT/ISA/220	Date of mailing *(day/month/year)* see form PCT/ISA/210 (second sheet) **FOR FURTHER ACTION** See paragraph 2 below
International application No. PCT/GB2005/001042	International filing date *(day/month/year)* 18.03.2005
Priority date *(day/month/year)* 23.03.2004	
International Patent Classification (IPC) or both national classification and IPC C08L67/02, C08K5/17	
Applicant COLORMATRIX EUROPE LIMITED	

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notifed the International Bureau under Rule 66.1*bis*(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

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Authorized Officer

Denis, C

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Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

   ☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).

2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:

   a. type of material:

   ☐ a sequence listing

   ☐ table(s) related to the sequence listing

   b. format of material:

   ☐ in written format

   ☐ in computer readable form

   c. time of filing/furnishing:

   ☐ contained in the international application as filed.

   ☐ filed together with the international application in computer readable form.

   ☐ furnished subsequently to this Authority for the purposes of search.

3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

4. Additional comments:

Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	1-8,11,14,15,17-22,24,27,28,32,33,36,38-41
	No:	Claims	9,10,12,13,16,23,25,26,29,30,31,34,35,37,42
Inventive step (IS)	Yes:	Claims	3,18-20,24,36,38-40
	No:	Claims	1,2,4-9,11-17,21-23,25-33,41,42
Industrial applicability (IA)	Yes:	Claims	1-42
	No:	Claims	

2. Citations and explanations

see separate sheet

Re Item V.

Reference is made to the following documents:
D1 : US 4 185 003 A (HOESCHELE, GUENTHER K) 22 January 1980
D2 : WO 03/031507 A (CIBA SPECIALTY CHEMICALS HOLDING INC; STOLL, KLAUS; TINKL, MICHAEL; AN) 17 April 2003
D3 : WO 02/079310 A (CIBA SPECIALTY CHEMICALS HOLDING INC; SIMON, DIRK; LAZZARI, DARIO; AND) 10 October 2002
D4 : US 6 274 212 B1 (RULE MARK ET AL) 14 August 2001

1. The present application does not meet the criteria of Article 33(1) PCT, because the subject matter of claims 9, 10, 12, 13, 16, 23, 25, 26, 29, 30, 31, 34, 35, 37 and 42 are not novel in the sense of Article 33(2)PCT.

Document D1 discloses a copolyetherester composition stabilised against oxidative degradation due to exposure to heat and light by incorporation of a mixture of 0.2% by weight of a phenolic antioxidant and 0.6% by weight of an hindered amine photostabiliser (Hals) (column 2 line 52 to column 2 line 36). The two additives are use for reducing the degree of discoloration of the composition (column 4 lines 9 to 18). The phenolic antioxidant may contain 1 to 4 amide groups (column6 lines 53 to 68) and may therefore be considered as an acetaldehyde scavanger compound (see definition of an acetaldehyde scavanger compound in the description of the present application, page 11 line 21 to page 13 line 6). The phenolic compound is added during the preparation step of the polymer (col. 8 lines 44-53) or to the moltent polymer together with the hindered amine compound. Pigments (for color) may also be added in the composition (col. 7 lines 16-22). However, document D1 differs from the present application in that D1 does not suggest the use of oligomeric hindered amines and the compositions of D1 are not used to prepare bottles. Moreover, the process of D1 does not involve the use of masterbatches, recycling steps or recycled products.
The claims 9, 10, 12, 13, 16, 23, 25, 26, 29, 30, 31, 34, 35, 37 and 42 are therefore not novel in view of D1.

2. The present application does not meet the criteria of Article 33(1) PCT because the subject-matter of claims 1, 2, 4-9, 11-17, 21-23, 25-33, 41 and 42 cannot be considered as involving an inventive step in the sense of Article 33(3) PCT.

Document D2 is considered to represent the closest prior art of claims 1 to 42. This document relates to a mixture of a polyester or a polyamide, such as poly(ethylene terephthalate) PET, and 0.01 to 2% of a suitable stabilizer selected from the group consisting of certain Mannich base compounds. After extrusion, the compounds (pellets) exhibit a lower residual acetaldehyde content than does PET alone when similarly treated.
The invention pertains to any polyester used in the manufacture of molded articles for instance bottles or containers which are used to store consumer materials, for example food, beverages and water. D2 specifies on page 48, §1 that the compositions may also contain (blue) dyes and that the presence of Mannich base compounds as additive stabilises the composition against the formation of acetaldehyde and against yellowing during melt processing. Example 3c of table 3 teaches that the effectiveness of the Mannich base compound as acetaldehyde scavanger additive is enhanced in presence of a dipiperidine amine.
Claims 1, 2, 4-9, 16, 17, 21-23, 25-33, 41 and 42 of the present application differs from document D2 in that an **hindered amine light stabiliser** is present in the composition together with an acetaldehyde scavanger additive.
There is no effect of that distinguishing technical feature. There are no comparative examples on file containing an acetaldehyde scavanger compound combined with the dipiperidine amine of D2.
The objective problem of the present application may therefore be considered as to provide an alternative stabiliser composition for polyethylene terephthalate comprising an acetaldehyde scavanger.
The solution to this problem is to combine an acetaldehyde scavanger with an hindered amine light stabiliser.
This solution cannot be considered as inventive for the following reasons:
D2 teaches clearly that the amine, when combined with an acetaldehyde scavanger compound, has a synergistic effect on lowering the acetaldehyde content in the polymeric composition (page 64 of D2). Moreover, the structures of the amine of D2 (dipiperidine)

and the hindered amine of the present application are very similar. Hindered amine (with piperidine moities) are known compounds for the skilled man as light stabilisers. D3 teaches that such hindered amine compounds can also be used as acetaldehyde scavanger additives (see example 1o of table 1).
Knowing D2 and seeking to provide an alternative stabilising composition for polyethylene terephthalate comprising an acetaldehyde scavanger, the skilled man would consider it obvious to replace the dipiperidine amine of D2 by another dipiperidine compound, more sterically hindered such as hindered amine light stabilisers as suggested in D3, since both compounds (dipiperidine of D2 and hindered amine of D3) are used in the same context (polyethylene terephthalate compositions for botles) for the same purpose: decrease the level of acetaldehyde and, as a consequence, decrease the level of discoloration.

Claims 10, 11, 14 and 15 of the present application differ from D2 in that the additive composition containing an hindered amine and an acetaldehyde scavanger additive is incorporated in the polyester via a masterbatch process.
However, this technical feature cannot be considered as involving an inventive step since it is common pratice in the field to use masterbatch compositions to incorporate small quantities of additive in the polymeric mixture (see D4, column 4 line 63 to column 5 line 8).

Claims 18 to 20, 24 and 34 to 40 of the present application differ from D2 in that the relative amount of acetaldehyde scavanger compound to the amine is higher, the acetaldehyde scavanger additive contains amido groups and the process of the present application involves recycling steps or the use of recycled products.
None of the cited documents D1 to D4 teach or even suggest such practice.

The claims 3,18-20,24,36,38-40 are therefore involving an inventive step in the sense of Article 33(3) PCT.

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International application No.
PCT/GB2005/001042

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PCT/GB2005/001042

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